

Is physical activity a necessary element during Italian coronavirus disease emergency? Yes or no debate

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ABSTRACT

From December 2019, the SARS-CoV-2 virus rapidly spreads in more than 200 countries in the world and WHO declared an epidemic public health emergency. In Italy, the Coronavirus disease caused 239.410 total infected cases and 34.644 people have died. Specific recommendations, as reducing social contacts and scrupulous hand hygiene, were adopted to limit the spread of the disease, affecting the daily habits of tens of millions of people. This gave rise to two different currents of thought: on the one hand those who always believed that the practice of physical activity represented an important preventive factor, on the other that it was necessary to stop physical activity because is a dangerous activity. The aim of this short paper is to discuss a correct approach to physical activity and exercise and to underline the beneficial effects, precautions, and limitations, providing a contribution that clarifies these different points of view in debate. Regular practice of physical activity and moderate exercise is useful for asymptomatic healthy people and therefore recommended by the major scientific societies, according to established scientific evidence available to date.

Keywords: Exercise; SARS-CoV-2 virus.

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INTRODUCTION

In recent weeks, the SARS-CoV-2 virus is posing a new threat to the citizens' health, so much so that the epidemic was declared a public health emergency of international interest by the World Health Organization (WHO), on January 30th (2020). Virus, whose origin is still to be explored (Andersen et al., 2020), is first detected in December 2019 in the city of Wuhan (capital of the Chinese province of Hubei) and then spread to more than 200 countries in the world. It could rapidly spread, primarily through droplets of saliva or discharge from the nose (e.g., when an infected person coughs or sneezes) and caused the Coronavirus disease (COVID-19). Covid-19 is an infectious flu-like symptoms (such as fever, dry cough, tiredness, difficulty breathing, loss of taste and smell) that in fragile subjects (such as advanced age and pre-existing illnesses, the latter typically hypertension, chronic respiratory disease, and diabetes) develops problems like pneumonia, acute renal failure, up to death. At the moment [21.07.2020], since the beginning of the epidemic emergency, 14,537,975 cases were confirmed worldwide (Table 1); in Italy (244,624 total cases) 35,058 people have died (Ministry of Health, 2020).

Table 1. Covid-19 emergency official data of Italian Ministry of Health. *Source: Italian Ministry of Health.*

Country	Cases	Dead
World	14,537,975	607,389
United States	3,748,248	139,964
Europe	3,089,641	207,641
Russia	777,486	12,427
United Kingdom	294,792	45,300
Spain	260,255	28,420
Italy	244,624	35,058
Brazil	2,098,389	79,488
India	1,155,191	28,084
South Africa	373,28	5,173
China	86,152	4,653

Note. Data are showed as Cases=Total Confirmed Cases and Dead=Total people dead, for each country.

Although there are also many ongoing clinical trials evaluating potential treatments, there are no specific vaccines or treatments for COVID-19.

The WHO (2020) and CDC (2019) put out specific recommendations, generally focused on self-isolation, reducing social contacts and scrupulous hand hygiene, to limit the spread of the disease. In particular, directives against participation in outdoor activities (e.g., physical activities and exercise) have inevitably affected the daily habits of tens of millions of people. WHO (2020) and Italian Ministry of Health (2020) underlined the importance to maintain a healthy lifestyle (healthy nutrition, regular physical activity, attention to alcohol and no smoking). In Italy, the restrictions were sent out differently from month to month, with some differences from region to region. This gave rise to two different currents of thought: on the one hand those who always believed that the practice of physical activity represented an important factor in preventing COVID-19 (“*yes side*”), on the other that it was necessary to stop physical activity because is an activity dangerous to citizens' health (“*no side*”).

The aim of this short paper is to discuss a correct approach to physical activity and exercise and to underline the beneficial effects, precautions, and limitations of the use of physical activity and exercise during Covid-19 pandemic in Italy. We try to provide a contribution that clarifies these different points of view in debate.

Discussion of the “yes” side of the debate

Some authors stated that moderate intensity physical activity is associated with enhanced activity of several immune system parameters that could be important in limiting viral infection (Sim et al., 2009; Pedersen and Hoffman-Goetz, 2000; Simpson et al., 2020), and in particular viral respiratory infections (Martin et al., 2009).

Furthermore, it has been clearly stated that sedentary habits have negative effects on some health clinical aspect [Lavie et al., 2019; Silva et al., 2020; Beale et al., 2020) and that physical activity (PA) and exercise are medicine in the treatment of different diseases (Pedersen and Saltin, 2015) and clinical aspects (Marini et al., 2019; Russo et al., 2018; Reginato et al., 2019; Pasqualini et al., 2019), during lifespan. In children, the lack of the possibility of doing movement, if forced and prolonged, leads to psychological discomfort and increase in the probability of developing metabolic pathologies. Furthermore, PA has a positive influence on health status, nutrition habits, and physical performance (Ranucci et al., 2017), on cognitive skills, attention and memory (Donnelly et al., 2016; Russo et al., 2017) and academic performance (Lima et al., 2019), as well as body image (Gehrman et al., 2006) and higher self-esteem (Altıntaş & Aşçi, 2008).

While in healthy adults, forced sedentary lifestyle leads to a risk increase of chronic non-communicable diseases (NCDs) (Saint-Maurice et al., 2019). In fragile people with NCDs (as diabetes (Banerjee et al., 2020)) and in elderly it leads to damage in short term (Oikawa et al., 2019; Bowden Davies et al., 2019; WHO, 2015; Bowden Davies et al., 2018). It is also necessary not to underestimate the psychological aspects related to a situation of forced quarantine (Brooks et al., 2020).

World Health Organization and American College of Sports Medicine argue that it is important to reduce sedentary activities and to continue to do physical activity during the COVID-19 emergency. If national regulations do not allow it to be done outdoors, it is necessary to maintain regular physical activity (Chen et al., 2020), organizing to practice at home, following suggestions issued by the two associations (WHO, 2020; ACSM, 2020). In Italy, the Ministero per le Politiche Giovanili e lo Sport (Presidenza del Consiglio dei Ministri, Ufficio per lo sport, 2020) promotes the “*Scienze Motorie per l'Italia*” initiative (included in the #DistantiMaUniti project) to raise awareness among Italian citizens of maintaining an active lifestyle, especially during the lockdown due to the emergency COVID-19. Also, many universities have organized video-lessons (recorded or live) for home-based exercise, with the support of graduates in sport sciences (University of Perugia, 2020; University of Padova, 2020; University of Pavia, 2020).

Discussion of the “no” side of the debate

In some countries, outdoor physical activities (e.g., walking alone or with domesticated animals, biking and jogging) are no suspended activities during COVID-19 emergency. Government provisions that recommended avoiding gathering of people by keeping a “*social distance*” (of about 1-2 m to be kept between individuals), concerns have arisen in population about the possibility to continue to do exercise in outdoor environments or in gyms. Recommendations made during the first weeks of the emergency, such as wearing a mask during training and making sure that you are exercising on disinfected equipment before and after use (Zhu, 2020) have increased people's fears of exposure. To avoid further risks of contagion, Italian Government has prepared the limitation or suspension of sporting events and competitions and the limitation or suspension of recreational activities, carried out outdoors or in public-open places (Italian Government, 2020).

We had to underline the fact that athletes share the same spaces, both during the competition also that in the locker rooms. It can also be hypothesised were detected some soccer players positives to the Covid-19

syndrome, after European Football League and Champions League events in the last February. This promotes the infection of viruses, especially in the colder periods.

Researcher suggested that a very intense, unaccustomed strenuous or prolonged exercise can cause a lowering of the immune system defences (Zhu, 2020): excessive physical exertion in fact, influences what the British call the "open window" syndrome. In Italy it could be the case of patient n°1, a marathoner from which it started the diffusion of virus in Codogno (Lombardy). In addition, the fact that Italians engaged in physical activity has strangely increased has come to the head of the news (estimates showed less than 20% of the population is physically active), contributed to the spread among the population of a strong social stigma and episodes of violence against those who leave the house (UNICEF, 2020).

As above described, important scientific societies recommended to exercise at home due to governments restriction. However, it is important to underline the safety criticality of practice of physical activities for a begin person who exercises without the necessary expertise to develop their own program (e.g., individual incorrect execution of exercise), without specialists help and supervision (Guo et al., 2017).

CONCLUSION

In conclusion, although we still have very few research-based data on the effect of exercise or training on COVID-19 infection and management, regular practice of physical activity and moderate exercise is useful for asymptomatic healthy people and therefore recommended by the major scientific societies, according to established scientific evidence available to date.

However, remaining critical logistic aspects (for example the high risk of spreading the virus, from person to person or through contaminated surfaces, and government recommendations) and the exercise carried out in closed, well ventilated, environments (for example at home), with the use of personal equipment may be more reasonable.

A home exercise program, which includes different types of exercises (aerobic, muscle strengthening, stretching and balance), that are simple and easily repeatable with expert advice of specialists in physical sciences, seems to be more suitable to avoid coronavirus infection and to preserve levels of fitness.

[Updated of 28.10.2020]

Also, in consideration of the second wave of infections that has been occurring in recent weeks and given the effects of National Governments prescriptions [Maugeri et al., 2020; Balducci and Coccia, 2020), it is strongly recommended to maintain a physically active lifestyle.

Further studies will be needed which could investigate the effects linked to the spread of the virus on the lifestyle and health of citizens.

AUTHOR CONTRIBUTIONS

RP and CF participated in the ideation of the paper and contributed to the manuscript writing. All authors have read and approved the final version of the manuscript and agree with the order of presentation of the authors.

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